

## GENETICS

# False Fiction Families

## Authors are Accused of Disregarding the Laws of Heredity In Creating Characters Who Actually Would not Exist

By Marjorie Van de Water

"If the horse kicks and the mare kicks, the colt is sure to kick," so goes the old adage. Scientists formulate the laws of heredity in very different language, involving such terms as "Chromosome," "Gene," "Dominant," and "Recessive." The import of the scientific law is, however, much the same as that of the old saying.

If both parents are feeble-minded, the chances are that the children will be mentally defective. If both parents are brown-eyed, we should not expect a family of blue-eyed children. Though we may expect some brown-eyed parents to have a minority of blue-eyed children.

So it is in life. But fiction writers are accused by a prominent geneticist, Dr. Wilhelmine E. Key, of tossing all these rules of science and common sense to the four winds.

### Hinges on Heredity

"In novels," says Dr. Key, "any kind of father and mother can have any kind of son or daughter."

Often the very point of the story hinges on the heredity of the hero or heroine—a heredity which the scientist tells us could not possibly have resulted in such a child in real life.

And it is not alone the young and inexperienced writer whom Dr. Key calls to account for thus ignoring the scientific laws of heredity. Some of the most prominent writers of today are among those she accuses. The following names she chose at random from the list of authors who have created impossible fiction families: Alice Brown, who is well known for her "Children of Earth," "Margaret Warrener," and other best sellers; Joseph Hergesheimer, who has given us "Balisand," "Java Head," "Tol'able David," and a great many other novels and short stories equally popular; John Galsworthy, the scholarly writer of the famous "Forsyte Saga," "Escape," "Dark Flower," "Old English," and other plays and novels as well known to the movie-goer as to the browser in libraries; A. S. M. Hutchin-

son, so well known for his "If Winter Comes," and May Sinclair.

These authors do not disregard or ignore other scientific facts, Dr. Key hastens to assure us. Indeed, she picked her list from the writers who, she reminds us, are justly celebrated for wide and keen observation and penetrating analysis.

"Nowhere," she says, "have the advances of science had a more telling influence than on the fiction of the day. These advances have broadened tremendously their range of subject matter and proportionately their power of presentation of its truths. A myriad of new and fascinating aspects of nature have thus been opened to our gaze, as well as many far-reaching problems of human conduct, all of which have become grist for the best-sellers' mill.

"So radio-activity, Freudianism, mental sub- and abnormality and the endocrine personality find their way to more or less effective embodiment in the fiction of the day. Indeed, so eager is the fictionist in his quest for the latest and most sensational developments in certain fields that he frequently keeps in advance of the well-established and the true."

But in other fields, and particularly in this field of heredity, the modern writer of fiction "lags lamentably behind and subscribes to wornout beliefs which would shame the most carelessly unintelligent."

One of these beliefs which scientific discovery has caused all but the superstitious to discard is the fallacy that the thoughts or yearnings of the mother before the child is born can change the physical appearance of the child.

Students of heredity know that the child may "take after" his mother or his father, or rather that he may combine the characteristics of a number of his forebears on both sides, but the mother cannot by taking thought add one cubit to his stature.

Yet Sophie Kerr in her "Painted Meadows," makes the whole outcome of the story turn on such an impossible situation. In the novel, the heroine's son bears a striking resemblance

to her former lover. This has been brought about by her continual dwelling on the image of this lover and the wish that the coming child were his child.

"Did such a thing ever happen in real life?" Dr. Key exclaimed. "If it were possible for it to happen, we venture to say that many a group of brothers and sisters would present a worse hodge-podge than it does now!"

### Skiping Generations

Another fallacy with regard to heredity which has been dramatized in recent fiction, is the mistaken idea that a particular characteristic may skip generation after generation only to appear out of the long-forgotten past to plague the children of today.

You may inherit musical talent from a musical father, but scientists have found no evidence that all the piratical tendencies of the black sheep who was hanged in the reign of Queen Elizabeth are likely to suddenly crop out in the daughter of a family which has been by nature respectable and virtuous for all the generations in between.

Human traits which we receive through inheritance from our parents, whether they are physical such as eye or hair color, or mental or moral, are classed by biologists as either "dominant" or "recessive." The dominant trait is so called because it is able to dominate or hide other "recessive" characteristics. The recessive character shows only in the absence of the dominant.

Heredity is dual in nature, coming half from each parent. If a man inherits brown eyes from both father and mother, well and good; he has brown eyes. But suppose one parent hands down brown eyes and the other blue eyes. He is not likely to have one eye blue and the other brown, but the brown will hide the blue inheritance and he will show brown eyes to the world. To show a recessive character like pure blue eyes he must inherit it from both parents. The hidden inheritance is not, however, destroyed but is passed on just as the other one is passed on.

Thus there are two classifications of brown-eyed people—those who are pure for brown, and those whose eyes are brown but who carry also the recessive blue character. When two such blue-carrying brown-eyed people marry, then

part of their children—one-fourth on the average—will be blue-eyed, as they will inherit the blue character from both parents.

The dominant traits appear in each generation; recessive traits may skip a generation but will appear in the grandchildren if the children marry into a family having an inheritance of the same recessive trait. In the case of blue eyes, there are so many blue-eyed people in the world that this is almost sure to happen to some in a normal size family.

Thus recessive traits, unless they are some rare defect, will usually crop out in the second generation. Dominant traits will appear generation after generation.

On this ground, Dr. Key calls the heredity described in Alice Brown's "Black Drop" an impossible one. In the story, Charles Tracy "took back" to a seventeenth century ancestor from whom he received the "black drop." This ancestor was sallow and lean, with a heavy brow, small eyes and an obstinate chin. Of his portrait it is said that it would do for a "witch-burning, man-hanging judge."

Charles, like his remote forebear, is a dark and violent man, appearing in the bosom of an eminently respectable family. Of this situation, Dr. Key says:

"The author has realized to the full the dramatic possibilities of this juxtaposition of an alien offshoot to the eminently respectable members of the family tree. However, to secure this juxtaposition she resorts to a means so false as seriously to detract from the value of her book as a convincing work of art.

### Just Doesn't Happen

"We are led to infer that this 'black drop' meandered along the stream of hereditary potentialities for nearly three centuries without once making an appearance. That gives scope for ten generations and the high degree of probability that it would show in each one of these generations whatever the type of marriage that was made. For the main attributes for which the drop stands, the swarthy coloring of hair and skin, the unstable temper, the tendency to sex-obliquity, all belong to the traits which tend strongly to make their appearance in fairly definite proportions from generation to generation. . . . In life, it just doesn't happen that way."

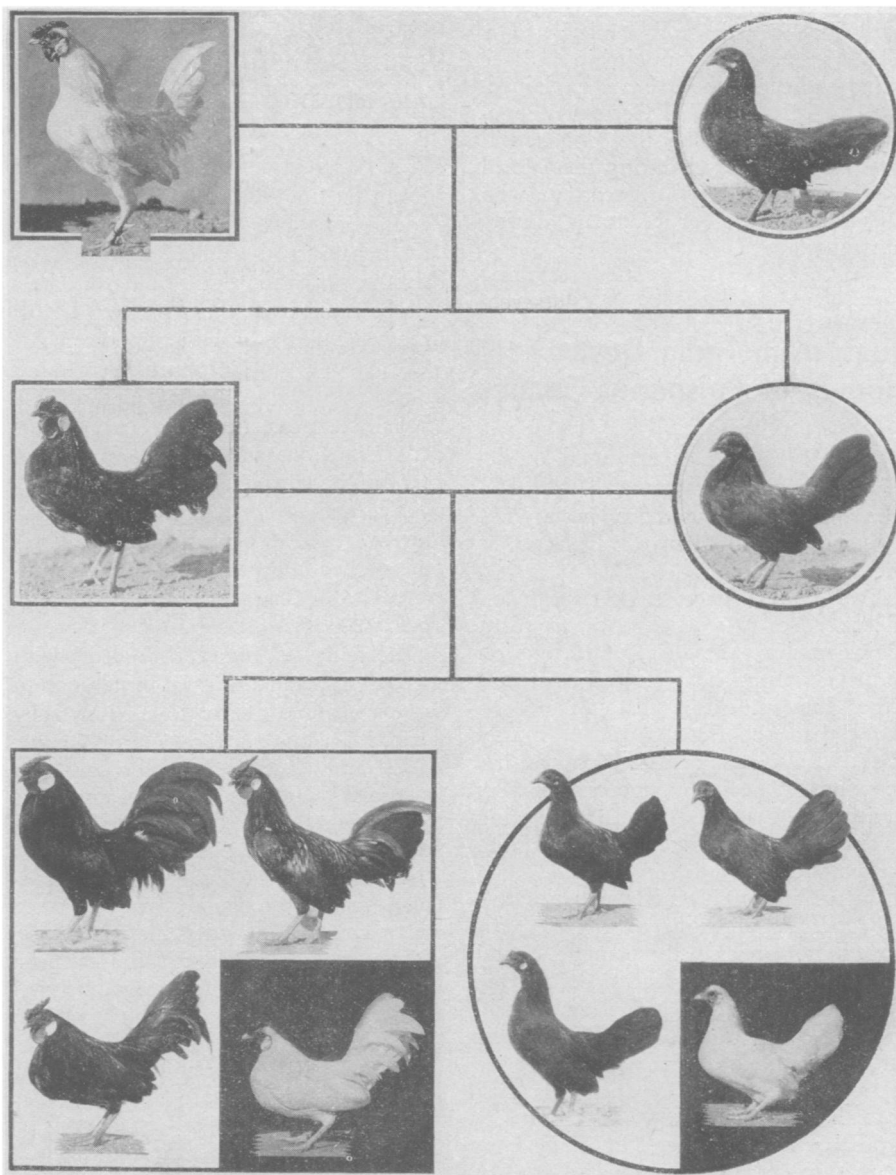
Hergesheimer's "The Three Black Pennys" is criticized by Dr. Key for the same inconsistency with the teach-

ings of scientists. In this work it was not a drop but "a certain black stream of Welsh blood cropping out undiminished after generations." The undesirable hereditary tendencies skip two and three generations to appear again in a manner quite at variance with all known and accepted genetic laws.

"The most flagrant violation of current genetic conceptions is to be found in A. L. S. Hutchinson's 'This Freedom'," Dr. Key said. "This is the novel which so stirred the ire of the feminists a few years ago. Here the violation is the more deplorable because the author

knows so well how to employ devices for giving his characters and situations the illusion of reality."

Rosalie's father was, to quote the story, "a fierce, futile, flying figure, scudding about on the face of his parish in the wilds of Suffolk." He "always jumped blindly and wildly into things, only to stagger down into a morass heavier and more devastating to ambition." The mother was a completely negative character who although she had a talent for painting miniatures, lacked even the persistence to keep this up. Dr. Key de- (Turn to page 140)



### HOW HEREDITY WORKS

Is shown in the series of photographs prepared by Robert C. Cook of the American Genetic Association. When the white bantam rooster was mated with a black hen, black was the dominant trait, and the first generation shows black but carries a white inheritance. When such white-carrying blacks mate, one-fourth of the young will be pure black, one-fourth pure white and half will have the mixed inheritance of their parents.

## JOSEPH HENRY

The American Co-Discoverer with  
Faraday of the Way to Get

## ELECTRICITY FROM MAGNETISM

Describes his Experiments in  
THE NEXT CLASSIC OF SCIENCE

yet described, and, further, a special absorption spectrum unknown until that time. I added that it had not been possible for me to continue the fractionation long enough to affirm positively that all these properties correspond to the same substance. Since then, I have been able, following a considerable number of fractionations of magnesium nitrate, to accumulate a greater quantity of this scarcely abundant element, to fractionate it in turn and to report finally that these different characteristics: line spectrum, spectra of reversal, absorption, electric fluorescence of the sulphate in vacuum (anomalous line); with calcium or gadolinium sulphate, accompany one another very constantly, remain sensibly proportional, and that they evidently characterize the same element.

The apparently contradictory results of MM. Crookes and Boisbaudran are due, I think, to the varying proportion of *Sigma* — *Z epsilon* contained in their material and to the fact that calcium and gadolinium reinforce the spectrum of samarium more than that of the other.

I propose for the new element the name *europium*, with the symbol Eu = 151 (approximately).

### Illinium

**OBSERVATIONS ON THE RARE EARTHS: XXIII. ELEMENT NO. 61. PARTS ONE AND TWO.** By J. Allen Harris with L. F. Yntema and B. Smith Hopkins, in *Journal of the American Chemical Society*, Vol. 48, June 1926.

#### Summary:

1. Fractionation of cerium group material as double magnesium nitrate concentrates element No. 61 between neodymium and samarium.

2. All fractions contain so small a proportion of No. 61 that its detection by X-ray analysis is difficult.

3. The absorption bands of Element No. 61 are masked by the broad bands of neodymium and samarium.

4. Fractionation as bromates reverses

the order of solubilities interposing gadolinium between No. 61 and samarium and terbium between No. 61 and neodymium. Under these conditions absorption bands probably due to the presence of Element No. 61 become plainly visible. . . .

We base our claim to the discovery of a new element on three different lines of evidence:

1. The presence of lines in the arc spectrum of materials prepared in this laboratory common to both samarium and neodymium and stronger in intermediate fractions. These consist of 130 lines in the red and infra red and five lines toward the violet.

2. The presence in our intermediate fractions of absorption bands which become stronger as the characteristic bands of neodymium and samarium become weaker. The bands at 5816 Å. and 5123 Å. are especially prominent and their positions confirm the belief that there is a systematic drift in the absorption bands of the rare earth group.

3. The presence of lines in the X-ray emission spectrum corresponding closely to the theoretical position for *L alpha* 1 and *L beta* 1 of Element 61. The mean value obtained for *L alpha* 1 agrees within 0.0004 Å. of the value calculated from Siegbahn's precision values. The single reading obtained for *L beta* 1 varies by 0.0040 Å. from the calculated value.

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#### ORNITHOLOGY

## Duck Shortage Imminent As Breeding Places Dry

**D**UCK SHOOTING during the coming fall, already shortened by two weeks, may face a still further curtailment as the result of a cooperative survey of the drought situation in the northwestern breeding grounds of the wild fowl, conducted by the United States and Canadian governments. As reported to *Science*, the findings of the field biologists are pessimistic.

Discouraging reports were made of unprecedented drought; of lakes and ponds and marshes turned into dusty barrens with no sign of aquatic life, and of the almost complete absence of water during the period in the great prairie breeding grounds of southwestern Manitoba, southern Saskatchewan as far north as Saskatoon, and Alberta westward to the foothills of the Rocky Mountains and northward to the vicinity of Edmonton.

*Science News Letter*, August 29, 1931



DR. WILHELMINE E. KEY  
*Geneticist who checks up on fictionists.*

### FROM PAGE 135

scribed the daughter born of this unpromising marriage:

"Here is the picture of the 'sport' which is miraculously put forth from this weak, ineffectual family stock. She was beautiful, she was intelligent and ardent. She was admirable and she felt that she was effective; and she had a confidence amounting almost to a feeling of power.' She has, too, a wonderful warmth of sympathy and human understanding."

Rosalie, in other words, was a bundle of positive traits, none of which, the author would have us believe, was inherited from her parents. In such an imposing array of characters we would expect some to be dominant, and dominant traits have a way of showing themselves in each generation.

Another stumbling-block which keeps the fiction writer from creating his characters in accordance with scientific laws is the danger of confusing social heredity with physical heredity. Many human lives are ruined, not through any hereditary defect, but through outworn traditions, prejudices, and unfortunate teachings which have been handed down from generation to generation like folk-lore.

The error of blaming physical heredity for the disastrous effects of this social kind of heredity is illustrated, Dr. Key believes, by May Sinclair's "Mary Olivier."

In "The Forsyte Saga," where Galsworthy carries the story of the Forsyte

family through several generations, he had an excellent opportunity to emphasize the way in which the descendants of one family differ from those of other families. Instead of this, the Forsytes rather typify a class. The story of the Forsytes, therefore, is not the story of a particular individualized family, but rather the story of the conflict between the solid, property-owning middle class and the changing social ideas and standards of the modern younger generation.

But it is not necessary to ignore the laws of heredity in order to produce an interesting fiction family, Dr. Key points out. As a demonstration, she points to Margaret Kennedy's "The Fool of the Family." In this book, too, the point of the story hinges on the heredity of the rather odd family portrayed. But Dr. Key says that Margaret Kennedy's appeal to heredity, unlike that of the others cited, is entirely in line with the latest conclusions in the field.

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## ASTRONOMY

## Ryves' Comet Will be Visible After Sunset in Western Sky

**R**YVES' comet, discovered within the past few days by an English amateur astronomer living in Spain, should be visible low in the western evening sky, just after sunset for the next few days. L. E. Cunningham, of the Harvard College Observatory, has just made a preliminary computation of its orbit. This indicates that the comet was at perihelion, or closest to the sun, on August 25.

According to the computations, which are admitted to be somewhat uncertain, the comet should now be in the constellation of Leo, and of the minus 3.4 magnitude. This is almost as brilliant as Venus at its brightest, and brighter than any other permanent astronomical object except the sun and moon. It should be about seven degrees from the sun, and may even be visible in broad daylight. At noon, when the sun is directly south, it should be seen to the left of and a little below the sun, if that body's direct glare is obscured behind the edge of a building, or in some similar way.

Incidentally, this position is only about three degrees away from the po-

## DENTISTRY

## Poor Teeth Are Price Paid By Man For a Better Brain

**W**HILE BRAINS GROW, teeth rest, and man pays with weak and crooked teeth for a better brain.

Dr. G. Elliot Smith, professor of anatomy of King's College, explained these ideas to the International Orthodontic Congress at London recently. The first seven years of a child's life, he said, are marked by a phenomenal brain growth, and there is a pause in his dental development. For another fifteen years or so he is sluggish in his dental affairs. That is because he is busy adjusting his complicated cerebral apparatus to life's needs. Undoubtedly, he said, the delay in teeth and jaw development is due to these changes.

But while brains are responsible for

ugly teeth in man, they have given him a beautiful chin, his distinguishing mark in the animal kingdom. Dr. Smith believes that the part of the jaw that does not bear teeth develops while the rest is held up. The salient chin, he says, is an index of "mental" development. But he does not say that persons with the most promising chins or the most outstanding teeth have the greatest brains.

Certain common beliefs as to the evolution of the human face are not justified, Dr. Smith said. The smallness or absence of the third molar is no sign that man will lose that tooth entirely in the near future. Peking Man, the latest ancient ancestor of human kind discovered, has his third molar small; he may be a million years old. Apes and monkeys, in fact all other primates, have smaller third molars.

Dental troubles such as the crowding and displacing of teeth are not evidence of evolutionary changes going on, Dr. Smith said. Apart from changes resulting from racial mixtures, nothing radical is taking place with human jaws or teeth. People had outgrowing teeth and other troubles 50 centuries ago.

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## ARCHAEOLOGY

## Old Terraces in Arizona Tell of Indian Farming

**T**ERRACES made by native farmers who tried to plant their crops on the lower slopes of a mountain centuries ago have been discovered in Arizona by the Van Bergen-Los Angeles Museum Expedition. The expedition is making an archaeological survey of a portion of the area drained by the Black and White Rivers in eastern central Arizona. In the party are Dr. Charles Van Bergen, Arthur Woodward, and Ben Wetherill.

To make their mountain-side cornfields, the prehistoric Indian farmers selected the places where old mountain streams had cut gulleys into the slopes, and using the banked earth brought down by the seasonal waters, they formed ridges, bordered with long rows of stones set on edge.

*Science News Letter, August 29, 1931*

sition of Nagata's comet when it was discovered by a Japanese amateur astronomer in California a few weeks ago. But then the sun was farther away.

Mr. Cunningham's computations of the orbit are based on observations of Ryves' comet made on August 14, by Dr. George Van Biesbroeck, of the Yerkes Observatory in Wisconsin, and on August 15 and 17 by Dr. E. C. Bower, of the Lick Observatory, in California. Three separate positions of a comet are necessary to determine its orbit. However, if the three are very close together, as was the case with those used by Mr. Cunningham, any slight error is greatly magnified. Only by using three observations spread over a wide arc of the comet's orbit can really precise computations be made. For this reason, Dr. Harlow Shapley, director of the Harvard College Observatory, in announcing Mr. Cunningham's results, states that further observations of the comet are urgently needed.

Though the present computations are very uncertain, they should permit the comet to be kept in view.

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